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Proceedings of the Maritimes Regional Advisory Process of the Georges Bank Scallop Stock

5 April 2000
Bedford Institute of Oceanography

René Lavoie, Chairman

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Foreword

These Proceedings are a record of the discussions at the Maritimes Regional Advisory Process (RAP) Georges Bank scallop stock meeting of 5 April 2000. They were prepared by volunteer rapporteurs and reviewed by all participants at (following) the meeting. Their purpose is to archive the activities and discussions of the meeting, including research recommendations, uncertainties and to provide a place to formally archive official minority opinions on status reports. As such, interpretations and opinions presented in this report may be factually incorrect or misleading, but are included to record as faithfully as possible what transpired at the meeting. No statements are to be taken as reflecting the consensus of the meeting unless they are clearly identified as such. Therefore, the Status Reports, which contain the consensus decisions of the meeting, should be used as sources of information of the status of the resources assessed. Additionally, the short summaries of stock status presented in these proceedings should not be referenced. The information on which the Status Reports are based are documented in the CSAS Research Document Series and it is these that should be consulted for an accurate reading of this information.

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ABSTRACT

These proceedings record discussions that were held during the Regional Advisory Process (RAP) meeting on the Georges Bank scallop stock in Maritimes Region in April 2000. The scientific peer review was conducted at the Bedford Institute of Oceanography (BIO) in Dartmouth on April 5, 2000. The discussions and related documentation from this meeting are presented in this document.

RÉSUMÉ

Ces comptes rendus résument les discussions qui ont eu lieu au cours des réunions du Processus de consultation régionale (PCR) relativement aux stock de pétoncles du Banc de Georges dans la Région des Maritimes en l'an 2000. L' évaluation détaillée a eu lieu le 5 avril 2000 à l'Institut océanographique de Bedford (IOB) à Dartmouth.. Ce document présente un compte rendu de cette réunion et les documents pertinents.

INTRODUCTION

The meeting to review the status of Georges Bank scallop was convened on 5 April 2000, in the sixth Floor Boardroom, Polaris Building, Bedford Institute of Oceanography, Dartmouth, Nova Scotia. The Chairperson, René Lavoie welcomed the participants (Appendix 1). The letter of invitation with a list of invitees is in Appendix 2 and the agenda and remit are given in Appendices 3 and 4, respectively. The list of documents tabled and research recommendations are given in Appendices 5 and 6.

Working Paper:

Robert, G., G.A.P. Black, M.A.E. Butler, and S.J. Smith. 2000. Georges Bank Scallop Stock Assessment – 1999. DFO RAP Working Paper 2000/31.

Referee: R.K. Mohn

Rapporteur: S.J. Smith

Remit:

- Assess the status of Georges Bank scallop until 31 December 2000. The assessment should include:
  - An age-structured population analysis, incorporating catch and survey data.
  - Where possible, address research recommendations raised from previous RAP meetings in March/April 1999.
  - Provide updated advice for the 2000 fishery and preliminary advice for the 2001 fishery.
  - Produce an Offshore Scallop Stock Status Report and supporting Research Document, documenting the results of the assessment.

Summary

1. In 1998, the management plan for Georges Bank recognized two management areas — Georges 'a', which encompassed the traditional scallop fishing area on the bank, and Georges 'b', which is in the deeper area of the northern edge of the bank where scallop yield is characteristically low.

2. Scallop fishing in Georges 'b' is managed through the use of incremental quotas over a set period of time referred to as 'rollover' TACs. The TAC was allowed to roll over six times in 1999 based upon the monitoring results of the catch rates and meat counts for a total landing of 1200 t.

3. Scallop fishing in Georges 'a' is managed by an annual TAC and the following points refer to this area only.

4. Catch and TAC were 2500 t in 1999. The 1994 and 1995 year-classes contributed to 70% of the catch by weight.

5. Annual catch rates in 1999 rose 35% from those in 1998 and effort decreased by 32% over the same period.

6. The total biomass estimate in 1999 is 20% higher that estimated for the previous year. The directed biomass estimate (ages 4–7) has also increased by over 25% from 1998.

7. The incoming year-class (1996) for the 2000 fishery is among the strongest encountered over the last 20 years.

8. At an exploitation rate of 13% on the directed age group (ages 4–7) which results in keeping the effort at the 1999 level, the TAC for 2000 would be 3200 t. At the $F_{0.1}$ exploitation rate of 26%, the resulting TAC of 6050 t would allow the biomass to increase by 6%. The F_{max} exploitation rate of 40% would result in a TAC of 8600 t and an 11% decrease in biomass.

9. The fishery should experience a few good years as a strong pulse of recruits from the 1996 year-class is currently recruiting to the fishery.

Issues

1. There is very strong evidence for a significant increase in growth rate in 1999, especially for scallops of the 1996 year-class. This evidence includes observations made during the survey, comparisons of shell height and age compositions from survey and commercial catches between 1999 and previous years and observations from the fishing industry. It was thought that these changes accounted for the fact that, contrary to past experience, commercial catch rates continue to increase throughout the year.

2. Adaptive allocation sampling designs have been experimented with during the survey in 1998 and 1999. Results indicate this approach can result in gains in precision of the abundance estimates. More work is needed on the definition of extra-sampling decision rules before this approach becomes fully implemented.

3. ADAPT model used here was highly constrained as it was fit to ages 4 to 7 combined only. As a result, the model could not provide an estimate for the population numbers of age 3 for the projection to 2000. As a consequence, a geometric mean of age three estimates over the time series was used and, based upon estimates from the survey, this estimate was probably an underestimate of the abundance of the 1996 year-class. The increased growth rate noted above also resulted in a proportion of the 1996 year-class appearing as age 4 scallops in 1999 in the model and hence contributed further to the under-estimation of the strength of this year-class.

4. A size-based production model (Collie-Sissenwine model) was applied to the data and the resulting estimates of population numbers, biomass and fishing mortality were very similar to those from the ADAPT model. While these results may indicate robustness on the part of the

ADAPT model to problems in using the same age/shell height relationship over all years, the Collie-Sissenwine model did have problems with the change in growth rate in 1999. Ad hoc changes to the definition of the shell-height range for the recruiting year-class appeared to help but a more rigorous analysis is needed.

Research Recommendations

1. Currently, one shell-height/age relationship is used to estimate age compositions for all years. Given the observation that growth rates appeared to increase in 1999 compared to other years, the sensitivity of the ADAPT model to annual changes in growth should be investigated. This problem has been identified in past RAP meetings but the lack of resources in the Invertebrate Division has not allowed for progress to be made.

2. The sensitivity of the ADAPT results to the assumption of negligible contribution to both the survey and the catch of scallops caught in area Georges 'b' prior to 1998 needs to be evaluated. At least, the actual proportions of commercial and survey catch originating from Georges 'b' could be presented for a number of years.

Appendix 1. Participants

Georges Bank Scallop RAP
5 April 2000

Participant	Address	Telephone	Fax	e-mail
René Lavoie, Chair	DFO, BIO Dartmouth,N.S.	(902) 426-2147	(902) 426-8484	lavoier@mar.dfo-mpo.gc.ca
Stephen Smith	DFO, BIO Dartmouth, N.S.	(902) 426-3317	(902) 426-1862	smithsj@mar.dfo-mpo.gc.ca
Amy Chisholm	DFO, BIO Dartmouth, N.S.	(902) 5342		
Roger Stirling	SPANS Dartmouth, N.S.	(902) 463-7790	(902) 469-8294	spans@fox.nstn.ca
Ginette Robert	DFO, BIO Dartmouth, N.S.	(902) 426-2616	(902) 426-1862	g.robert@ns.sympatico.ca
Greg Stevens	DFO, Marine House Dartmouth, N.S.	(902) 426-5433	(902) 426-9683	stevensg@mar.dfo-mpo.gc.ca
Gerald Mossman	N.S. Dept. of Fisheries Halifax, N.S.	(902) 424-4560	(902) 424-1766	
Bob Mohn	DFO, BIO Dartmouth, N.S.	(902) 426-4592	(902) 426-1506	mohnr@mar.dfo-mpo.gc.ca
Jerry Black	DFO, BIO Dartmouth, N.S.	(902) 426-2950	(902) 426-1506	blackj@mar.dfo-mpo.gc.ca
Maureen Butler	DFO, BIO Dartmouth, N.S.	(902) 426-5342	(902) 426-1862	butlerm@mar.dfo-mpo.gc.ca

Appendix 2. Invitation Letter

Maritimes Region
Science Branch
P.O. Box 1006
Dartmouth, NS, B2Y 4A2

March 9, 2000

Distribution

Subject: Peer review of Georges Bank scallop stock Stocks

The assessment of Georges Bank scallop stocks in Maritimes Region will be reviewed in the 6th Floor Boardroom, Polaris Building, Bedford Institute of Oceanography, Dartmouth, April 5, 2000

The purposes of peer review are: to examine the scientific approaches of the stock assessments; to identify any weaknesses in methodology; to help improve the clarity of assessments; to make research recommendations; and to develop collaborative research programs.

The peer review includes detailed review of stock assessments and Stock Status Reports. A detailed stock assessment of the offshore scallop stock (Georges Bank) will be done

Copies of the draft assessment and the draft stock status report will be sent to the referee one week before the meeting to allow him time to become familiar with the material. At the meeting, science staff will provide a brief overview of the assessments which should include: the main conclusions, the supporting evidence, any new methods, and major limitations. The presentation will be followed

Région des Maritimes
Direction des sciences
C.P. 1006
Dartmouth, N.-E., B2Y 4A2

le 9 mars 2000

Liste de diffusion

Objet : Examen par les pairs du stock de pétoncles du Banc de Georges

Le 5 avril, 2000, on procédera dans la salle du 6ième Étage, Édifice Polaris de l'Institut océanographique de Bedford à Dartmouth à l'évaluation du stock de pétoncles du Banc de Georges

L'examen par les pairs vise à: examiner les méthodes scientifiques ayant présidé aux évaluations des stocks; à relever les faiblesses dans la méthodologie; à contribuer à améliorer la clarté des évaluations; à formuler des recommandations pour la recherche; et à mettre au point des programmes de recherche en collaboration.

L'examen par les pairs comprend un examen détaillé des évaluations des stocks et des rapports sur l'état des stocks. On effectuera une évaluation détaillée du stock de pétoncles au large des côtes (banc Georges.

Copies de l'évaluation provisoire et de l'ébauche du rapport sur l'état des stocks seront envoyées à l'examinateur une semaine avant la réunion pour lui permettre de se familiariser avec les documents. À la réunion, le personnel des sciences donnera un bref aperçu de ses évaluations, soit les principales conclusions, les preuves à l'appui, les nouvelles méthodes et les principales contraintes. L'exposé sera suivi

by comments from any of the scientific referees and then from any of the observers. The finalised stock status report will be prepared at the meeting. The minutes of this meeting will be published as a proceedings.

We greatly appreciate your contribution to this valuable exercise.

d'observations formulées par l'examinateur scientifique puis par les observateurs. La version définitive du rapport sur l'état du stock sera préparées à la réunion et le procès-verbal de la réunion sera publié comme délibérations.

Nous vous remercions beaucoup de votre apport à cet important exercice.

Original signed by / Copie originale signée par

René E. Lavoie, Ph. D.
RAP Committee Chairman
Science Branch / Direction des Sciences
Maritimes Region / Région des Maritimes
Bedford Institute of Oceanography / Institut océanographique de Bedford
P.O. Box 1006 / C. P. 1006
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e-mail / courriel : lavoier@mar.dfo-mpo.gc.ca

c.c. : M. Sinclair
R. O'Boyle
S. Smith

Distribution / Diffusion :

Scientific referees / Examinateurs scientifiques	***Government observers / Observateurs du gouvernement***	***Industry observers / Observateurs de l'industrie***
R. K. Mohn, BIO/IOB	Greg Peacock, Maritimes	Angela Bugden
	Bruce Osborne, NS/N.-É.	Jim Mosher
	Greg Stevens, Maritimes	Eric Roe
	Tim Surette, DFO/MPO, Yarmouth	Roger Stirling

Appendix 3. Agenda

Peer review of Georges Bank scallop stock /
Examen par les pairs du stock de pétoncles du Banc de Georges

Proposed timetable / Calendrier proposé

April 5 / le 5 avril	Time / Heure	***Lead / Responsable***
Introduction	1000-1010 / de 10 h à 10 h 10	R. E. Lavoie
Scallop: Georges Bank / Pétoncles : Banc Georges	1010-1230 / de 10 h 10 à 12 h 30	G. Robert
Critique & discussion	1330-1500 / de 13 h 30 à 15 h	R. K. Mohn & Observers/observateurs
SSR Georges Bank Scallop / RES Pétoncles du Banc Georges	1500-1700 / de 15 h à 17 h	all

Appendix 4. Meeting remit.

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